ABSTRACT OF THE DISCLOSURE

A fuel cell is capable of suppressing the deterioration and instability in the performance which r sult from the plugging of water in separators as well as the reduction of the service life of cell units, and further the single fuel cell is capable of preventing the reactant gas from flowing into the adjacent gas flow channels via gas diffusion layers, so that the reaction uniformly takes place in the surface of electrodes, thereby enabling a rated electric power to be obtained.

A fuel electrode catalyst layer 3 and an air electrode catalyst layer 2 are disposed on both surfaces of an electrolyte membrane 1, and gas diffusion layers 5, 4 are further disposed on the outer surface of the electrode catalyst layers 3, 2 respectively, and a pair of separators 10 having gas flow channels 8 for reactant gas, each of said separators being disposed so as to face the gas diffusion layers 5, 4, so that the fuel cell is produced by laminating single cells, each of which is formed by fastening the above layer elements between the separators. In this case, the pressure loss in the case when the reactant gas flows into adjacent gas flow channels 8 may be set to be greater than the pressure loss in the case when water stayed in the gas flow channels 8 is blown away by the reactant gas.

A fuel electrode catalyst layer 3 and an air electrode catalyst layer 2 are disposed on both surfaces of an electrolyte membrane 1, and gas diffusion layers 5, 4 are further disposed on the outer surface of the electrode catalyst layers 3, 2 respectively, and a pair of separators 10 having concave portions and convex portions 20 to form gas flow channels 8 for reactant gas, each separators 10 being disposed on the gas diffusion layer so as to face the gas diffusion layer, so that th fuel cell is produced by laminating one or more members, i.e., single cells, each of which is formed by fastening the

electrolyte membrane 1, catalyst layers 2, 3 and gas diffusion layers 4,5 to be clamped between the convex portions 20 of the separators 10. In this case, the gas diffusion layers are selected such that D2 is D1 $\times$ 0.9 or smaller, where D1 is the thickness of the gas diffusion layer before fastened between the separators and that D2 is the thickness of the gas diffusion layer after fastened between the separators.